

not to be cited without prior reference to the Division

DEPARTMENT OF AGRICULTURE [NI]
AQUATIC SCIENCES RESEARCH DIVISION

CRUISE REPORT - LF/12/92

NW IRISH SEA NEPHROPS STOCKS 8-13 May 1992

PERSONNEL

R. Briggs, PSO [SIC]
M. Service, SSO
W. Clarke, SSO
C. Reavey, SO
C. Burns, ASO
Mrs A. Hayes, ASO
J. Peel, ASO

OBJECTIVES

1. To trawl selected stations sampled during earlier cruises and perform qualitative and quantitative analysis of catches.
2. To retain stomachs of selected fish species of future analysis.
3. To carry out underwater video and 'stills' photography at selected stations during both day and night conditions.
4. To retain samples of *Nephrops* and fish liver for analysis of heavy metal and organic residue levels.
5. Sample benthic sediment for granulometric and chemical analysis.
6. To collect surface water CTD mapping data for ASRD's Biological Oceanography Programme.
7. To retain samples of *Nephrops* for a FACRD project.

METHODS

Trawls of 30 to 60 minutes duration were performed at each station as shown in figure 1 using a custom made *Nephrops* net of 43.2 (± 1.25)mm mesh size with a cod-end of 48.7 (± 1.57)mm mesh size. Catch bulk was quantified by counting baskets filled from the catch. Sample baskets of catch were sorted to provide an assessment of species composition. The *Nephrops* in each sub-sample were divided into male and female components and the ovary maturity stage of the females noted. Carapace length frequency distributions of both male and female *Nephrops* were measured and the number of recently moulted (soft shelled) animals counted. The contribution of all fish species in catches was quantified and their length composition determined. Sediment samples for future granulometric and chemical analysis were taken using a Day grab at the beginning and end of each station. The stomachs of selected fish species were removed and frozen for future examination.

The underwater video camera and sledge were deployed from the hydrographic winch to which a light guage towing wire had been fitted for filming operations. The warp was passed through a series of pulleys so that the sledge could be deployed over the vessels stern. Hauling was successfully completed with the assistance of the marine crane. Details of station position, water depth, trawling speed and length of tow were obtained from the instrumentation on the bridge. The cruise track was recorded using Microplot and Roxann with each tow marked as an event for future reference. Results of sediment analysis will contribute towards the ground truth calibration of Roxann. Surface water CTD data were logged at 6 minute intervals throughout the cruise. Scanmar trawl door transducers were fitted in order to provide data which, when combined with those on net dimensions should give an estimate of the effective fishing area of the net. The night was again spent dodging off the Co Down coast.

NARRATIVE

Friday 8 May - weather conditions poor NW8-9

Following initial delays in loading fishing gear MRV Lough Foyle sailed from Belfast at 02.20 and proceeded south to Dundalk Bay. Rough sea conditions and essential deck work on the installation of new trawl warps meant that fishing operations could not commence until 13.48 at tow 1 (Figures 1 & 2). Tow 2 was then completed followed by a comparative repeat tow over the station trawled in tow 1 during twilight at 21.45. Sediment samples were taken at the start and end of each tow. Improved *Nephrops* catches were noted during the twilight tow as shown in Figure 3. The night was spent dodging in the Dundalk Bay area.

Saturday 9 May - weather clear and calm

The underwater video camera was successfully deployed for the first time during the cruise and *Nephrops* burrows in the areas trawled on the previous day were filmed. Tows 4 to 6 were then

trawled. More filming work was performed in the evening in the areas trawled earlier. Good pictures of both *Nephrops* and their burrows were obtained. Attempts at using the new lights and a red light filter to observe *Nephrops* behaviour were unsuccessful due to water entering the light housing. The night was spent dodging off the Co Down coast.

Sunday 10 May - weather clear and calm

The ship was contacted by the MAFF ship *RV Cirolana* which was working in the Irish Sea and a brief radio conversation was held with Dr Keith Brander (SIC). *RV Cirolana* was engaged in some biological oceanography work in the Irish Sea frontal region.

The sledge and camera were again deployed in the area to be fished next (tow 7). More good quality pictures were obtained which will be used in attempts to determine burrow density. Poor *Nephrops* catch rate at tow 7 and no catch at tow 8 resulted in a decision to move east to stations with deeper water (100-110m) where tows 9 and 10 were completed with reasonable catch rates. It is likely that the observed difference in *Nephrops* catches between deep and shallow water in clear weather is due to the characteristic behaviour patterns of *Nephrops* which results in a crepuscular cycle of abundance.

Monday 11 May - weather initially calm becoming gale 8 South
A new trawl station (Tow 11) to the east of those already covered gave good *Nephrops* catches. The sledge and camera were deployed over this station and gave an excellent view of *Nephrops* burrows and evidence of bottom scars, possibly due to recent trawling. Burrow density appeared to be higher than at the more inland stations. Tow 12 which was at a station previously fished in June 1990 gave a very high *Nephrops* catch rate of over 300kg per hour. Tow 13, also a new station, was the last of the day due to increasing deterioration of the weather. The ship returned to Belfast Lough to shelter at anchor for the night.

Tuesday 12 May - weather SW fresh (5-7)

A moderation in the weather through the night meant that the ship could sail at 06.00 for the fishing grounds off Ardglass. Tow 14, fished first during the 1991 May cruise, yielded a good *Nephrops*/fish catch with a similar bulk as in 1991. The camera was next deployed and a filming tow was completed; this gave more good film of *Nephrops* burrows. Tow 15 was over similar ground to that covered in tow 14. The vessel then moved slightly SW to complete tows 16 and 17. The day was completed by an evening camera tow using red filters over the sledge lights in the area just fished. Although the sea-bed, *Nephrops* and burrows were observed the picture quality was not so good as that achieved earlier in the day. The vessel spent the night dodging SW of tow 17.

FIGURE 1

MAP OF WESTERN IRISH SEA SHOWING POSITION OF STATIONS TRAWLED DURING CRUISE

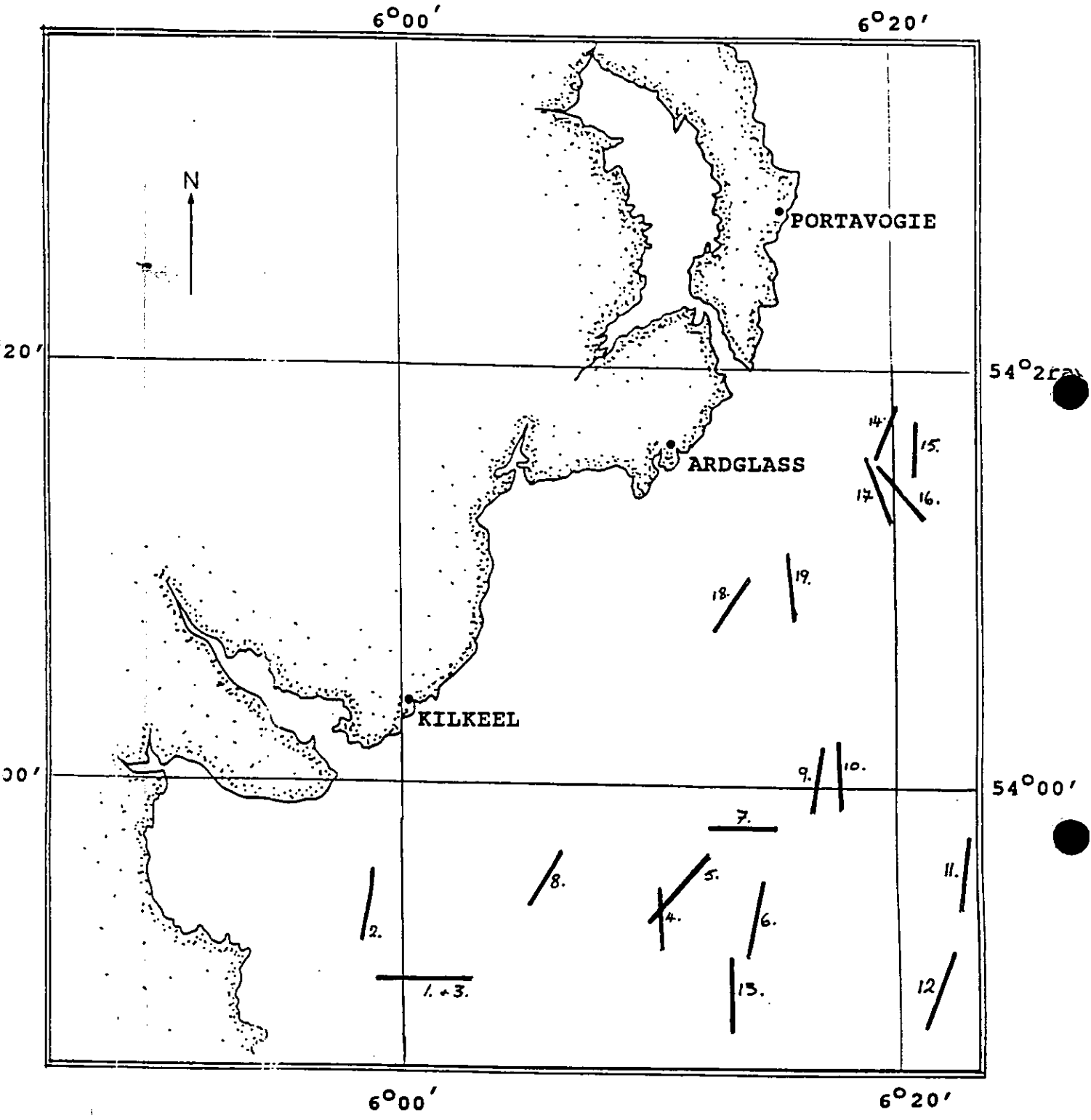
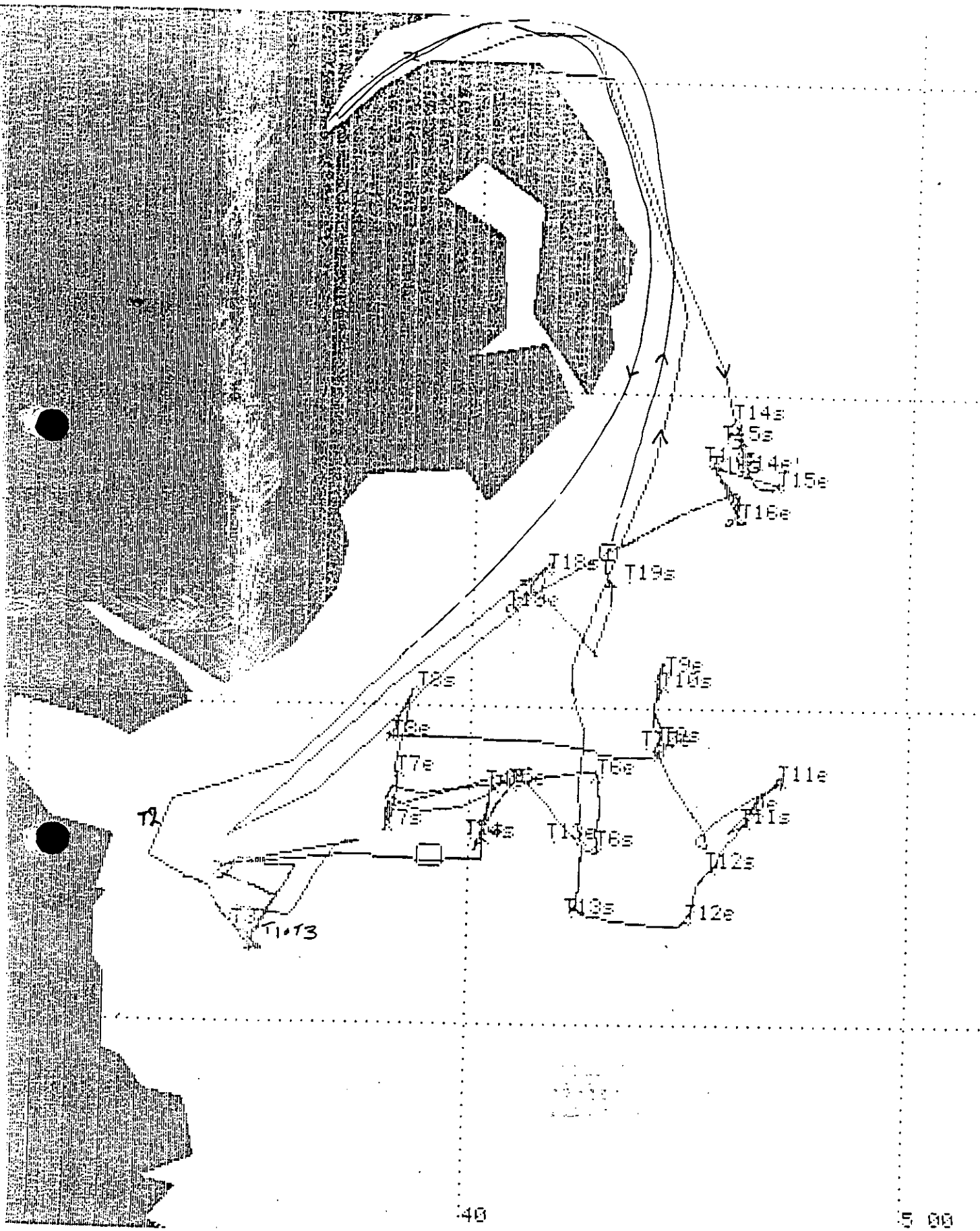


Figure 2

CRUISE TRACK FROM MICROPLOT



40

5 00

NEPHROPS SIZE COMPOSITION
 MALES
 STATIONS 1 & 3

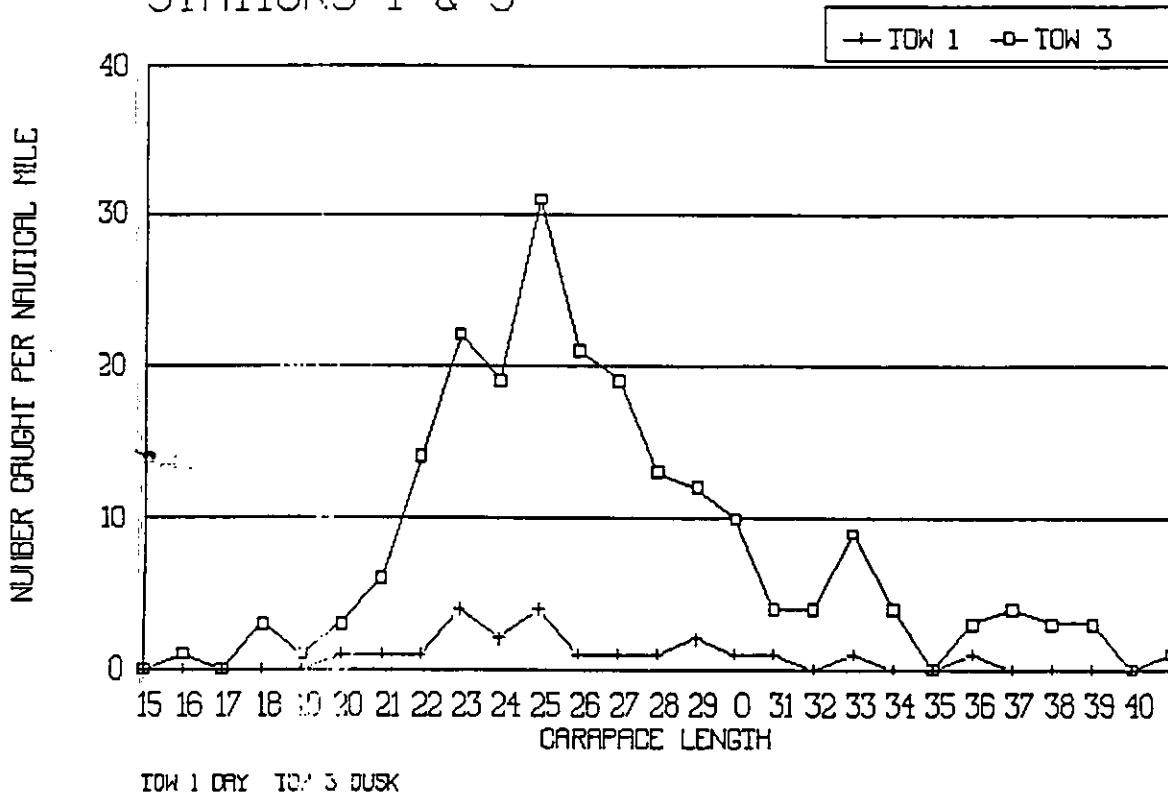


FIGURE 4

POOLED WHITING CATCH AT LENGTH
 NUMBER OF FISH PER HOUR

